

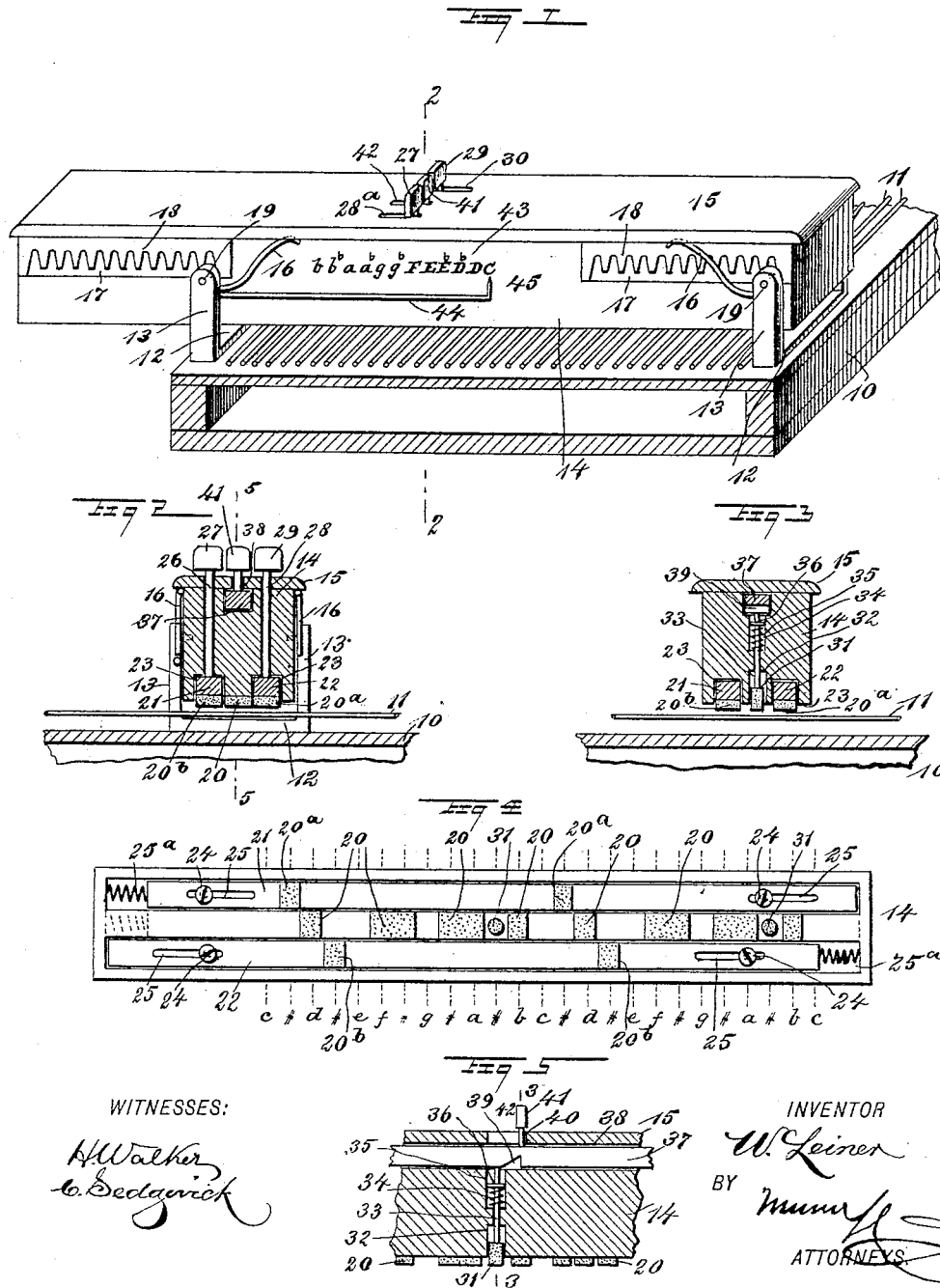
(No Model.)

W. LEINER.

ATTACHMENT FOR MUSICAL INSTRUMENTS.

No. 493,099.

Patented Mar. 7, 1893.



WITNESSES:

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ATTACHMENT FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 493,099, dated March 7, 1893.

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To all whom it may concern:

Be it known that I, WILLIAM LEINER, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Attachments for Musical Instruments, of which the following is a full, clear, and exact description.

My invention relates to improvements in musical instruments, and the object of my invention is to produce a simple device which may be attached to instruments such as American harps or zithers, or analogous stringed instruments, which may be conveniently operated so as to change the key of the instrument to which it is applied, which may also be made to change the key from a major to a minor, which is arranged to damp all the strings except those in actual use so as to facilitate easy and nice playing, and which may be removed from the instrument when a string is to be replaced or the instrument cleaned.

To these ends my invention consists in certain features of construction and combinations of the same, as will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a broken perspective view of a common form of American harp with my improved attachment applied thereto. Fig. 2 is a broken vertical cross section on the line 2—2 in Fig. 1, showing in detail the construction of the cross bar and the damping mechanism carried thereby. Fig. 3 is a broken cross section on the line 3—3 in Fig. 5. Fig. 4 is an inverted plan of the cross bar which is applied to the instrument and carries the dampers; and Fig. 5 is a broken longitudinal section of the same, showing in detail the lever and slide mechanism for operating the vertically movable dampers used in changing the key of the instrument.

The harp 10 is of the usual kind, and has the strings 11 extending across the top. On opposite sides of the strings and secured to the top of the harp are base pieces 12 having upwardly extending parallel arms 13, although the arms may be secured directly to the harp without the base pieces if desired. The sliding cross bar or damper bar 14 is held to move

transversely across the strings and between the arms 13, this bar having a top piece 15 which projects slightly beyond the sides of the bar so as to form flanges against which the springs 16 may rest. These springs are of curved wire and are secured to the arms 13, and the tension of the springs is such as to normally raise the bar 14 and hold the dampers thereon out of contact with the harp strings. Near the ends of the bar and on opposite sides are openings or slots 17, and secured on the sides of the bar in the upper portion of the openings are toothed racks 18, the teeth of which project downward and the racks are let into the bar so that the outer faces of the racks are flush with the side of the bar; the distance between the rack teeth corresponds to the distance between the strings 11 of the harp.

Pins 19 are secured in the upper ends of the arms 13 and these pins project into the slots 17 and prevent the bar from being raised too high. On the bottom of the bar, near the center and at suitable intervals, are dampers 20 of felt or other suitable material, which are adapted to rest upon a portion of the strings when the bar is depressed and damp the same, the dampers being arranged so as to span regular intervals. Near the opposite sides of the bar and on the bottom are slides 21 and 22 which extend longitudinally of the bar and move in slideways 23 therein, these slides having on their under sides dampers 20^a and 20^b which are adapted to be brought into contact with the strings of the instrument, as described below. The slides are held to the bar by screws 24 which project through longitudinal slots 25 in the slide, and the slides are held normally in position to bring the dampers upon the strings so as to form a major chord when the strings are struck, by spiral springs 25^a, there being a spring for each slide and each spring is arranged between one end of the slide and the adjacent end of the bar.

A lever 26 is secured to the slide 21 and extends upward to the bar 14, the lever terminating at its upper end in a finger piece 27, and a similar lever 28 is secured to the bar 22 and is provided at the top with a finger piece 29, the levers being held to slide respectively in slots 28^a and 30 in the bar 14, as shown in

Fig. 1. The bar is provided, in addition to the dampers above described, with small vertically movable dampers 31 which are arranged in line with the dampers 20 and which are adapted for use in changing the keys, these dampers being held normally out of contact with the keys and lying in holes 32 in the bottom of the bar. Each damper 31 has a vertical shank 33 and the shank and damper are raised by a spiral spring 34 which is held in a recess 35 in the bar near the top and presses upward on a collar 36 in the shank.

The upper end of the key presses against a slide 37 which moves in the slideway 38 near the center and top of the bar, and the slide 37 has notches 39 which, when moved above the shanks 32 of the dampers 31, permit the said shanks and dampers to rise. The slide 37 is moved by a lever 40 which projects upward and terminates in a key piece 41 above the bar 14, and the lever 40 is held to move in a slot 42 in the top of the bar or rather in the top piece 15 of the bar. On the front of the bar is a table 43 indicating the several keys of the instrument, and a rod 44 is secured to one of the arms 13 and is bent upward at its free end to form a pointer or indicator 45, and when the bar is moved the position of this indicator, in relation to the table 43, will indicate the key which will be formed, and this key will always be a major if the levers have not been used.

The operation of the bar in connection with the instrument will be understood from the following description:—A chromatic octave consists of twelve intervals and if intervals 1, 5 and 8 are taken together they form what is called a major chord, and by keeping the same ratio of intervals the key note may be based upon any note and all major chords formed. To this end the dampers 20 are spaced so that when the bar is pressed down, the pins 19 engage with the teeth of the racks 18, and the dampers 20, 20^a, 20^b and 31, cover all the strings but the first and eighth in each octave, and if a pick or ring is passed over the strings a major chord will be voiced and thus, with the aid of the twelve notches in the racks, all major chords may be made.

The letters represented by the several strings are produced in Fig. 4 in a diagrammatic way, so that this may be better understood, and by reference to the said letters and to the dampers on the bar 14, it will be seen that all the strings except the C, E and G strings are damped. By pressing down the bar 14 and pushing the finger piece 27 and slide 21 to the left, the dampers on the slide 21 will be moved one interval, and as they have previously covered the second interval they will now expose said interval and cover the first, thus forming a diminished chord comprising the second, fifth, and eighth intervals. If by pressing down the bar the finger piece 29 and slide 22 are pushed to the right, the dampers on the said slide will move one in-

terval to the right and expose the fourth interval, which has been previously covered, and cover the fifth, thus forming a minor chord comprising the first, fourth and eighth intervals. If the finger piece 41 and slide 37 are pushed to the left, the dampers 31 normally cover the eleventh interval, will rise upward when the notches 39 of the slide register with the shanks of the dampers, and said intervals will be exposed, thus making the chord of the seventh, and the chord of the instrument when struck will comprise the first, fifth, eighth and eleventh.

From the foregoing description it will be seen, without going into further details, that these dampers may be used in very many combinations so as to damp any desired strings and produce any desired key, and the dampers, when in their normal positions, will when the bar is pressed down, cover the second, third, fourth, sixth, seventh, ninth, tenth, eleventh and twelfth intervals, leaving exposed the first, fifth and eighth, a major chord.

The instrument may be used to perform different styles of music such as instrumental, vocal accompaniments, &c., and as the keys may be changed by simply sliding and pressing down upon the bar 14, the instrument may be very easily played.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with a harp or similar stringed instrument, of a sliding and yieldingly supported bar above the strings, said bar being provided with dampers on its under side for contacting with the strings of the instrument, substantially as described.

2. The combination with a stringed instrument of the character described, of a sliding and yieldingly supported bar above the strings of the instrument, a plurality of spaced dampers carried by the bar and adapted to contact with the strings, and mechanism for shifting the relative positions of the dampers, substantially as described.

3. The combination with a stringed instrument of the character described, of a sliding and yieldingly supported bar above the strings of the instrument, a plurality of dampers produced on the bar and adapted to contact with a portion of the strings, movable slides arranged on the bar and provided with spaced dampers to contact with the strings, and mechanism for moving the slides, substantially as described.

4. The combination with a stringed instrument of the character described, of parallel arms extending outward from the instrument on opposite sides of the strings, a spring-repressed sliding bar held to move between said arms, toothed racks carried by the bar, the teeth being spaced to correspond with the distance between the instrument strings, pins on the arms held to engage the teeth of the racks,

and a plurality of dampers carried by the bar and adapted to strike the strings of the instrument, substantially as described.

- 5 5. The combination with a stringed instrument of the character described, of a slide bar held to move across the strings of the instrument and adapted to be pushed to and from the strings, toothed racks produced on the bar, and the teeth of the racks being spaced to correspond with the distance between the instrument strings, fixed pins held adjacent to the bar and adapted to engage the rack teeth, a plurality of spaced dampers rigidly secured to the bar and adapted to engage the instrument strings, longitudinally movable slides arranged on opposite sides of the fixed dampers, the slides being also provided with dampers to engage the strings, and a lever mechanism for moving the slides, substantially as described.
- 10 6. The combination of the stringed instrument, the movable bar held to slide across the strings and carrying dampers to engage said strings, spring-repressed dampers held normally out of contact with the strings and to rest in recesses in the bar, a slide held to move in the bar and adapted to press the dampers

into contact with the strings, and notches produced in the slide and adapted to register with the shanks of the dampers so as to permit the dampers to rise out of contact with the strings, substantially as described.

7. The combination with a stringed instrument of the character described, of parallel arms arranged on opposite sides of the strings of the instrument, a flanged bar held to slide between the arms and across the instrument strings, springs carried by the arms and held to engage the flange of the bar and hold the bar out of contact with the strings, adjustable dampers carried by the bar and held to engage the strings of the instrument when the bar is pressed, guides to direct the dampers upon the strings, a table of keys produced upon the bar, and an indicator secured to one of the arms and arranged to indicate on the table the key to be played, substantially as described.

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Witnesses:

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